

Environmental Protection Agency
Pt. 82, Subpt. A, App. F
APPENDIX F TO SUBPART A OF PART 82—LISTING OF OZONE-DEPLETING CHEMICALS

| Controlled substance | ODP | AT L | CLP | BLP |
|--|----------|------------|------------|------|
| A. Class I: | | | | |
| 1. Group I: | | | | |
| CFCl ₃ -Trichlorofluoromethane (CFC-11) | 1.0 | 60.0 | 1.0 | 0.00 |
| CF ₂ Cl ₂ -Dichlorodifluoromethane (CFC-12) | 1.0 | 120.0 | 1.5 | 0.00 |
| C ₂ F ₃ Cl ₁ -Trichlorotrifluoroethane (CFC-113) ... | 0.8 | 90.0 | 1.11 | 0.00 |
| C ₂ F ₄ Cl ₂ -Dichlorotetrafluoroethane (CFC-114) | 1.0 | 200.00 | 1.8 | 0.00 |
| C ₂ F ₅ Cl-Monochloropentafluoroethane (CFC-115) | 0.6 | 400.0 | 2.0 | 0.00 |
| All isomers of the above chemicals | | [Reserved] | | |
| 2. Group II: | | | | |
| CF ₂ ClBr-Bromochlorodifluoromethane (Halon-1211) | 3.0 | 12 | 0.06 | 0.13 |
| | | -18 | -.08 | -.03 |
| CF ₃ Br-Bromotrifluoromethane (Halon-1301) ... | 10.0 | 72 | 0.00 | 1.00 |
| | | -107 | | |
| C ₂ F ₄ Br ₂ -Dibromotetrafluoroethane (Halon-2402) | 6.0 | 23 | 0.00 | 0.30 |
| | | -28 | | -.37 |
| All isomers of the above chemicals | | [Reserved] | | |
| 3. Group III: | | | | |
| CF ₃ Cl-Chlorotrifluoromethane (CFC-13) | 1.0 | 120 | 0.88 | 0.00 |
| | -250 | -1.83 | | |
| C ₂ FCl ₅ - (CFC-111) | 1.0 | 60 | 1.04 | 0.00 |
| | -90 | -1.56 | | |
| C ₂ F ₂ Cl ₄ - (CFC-112) | 1.0 | 60 | 0.90 | 0.00 |
| | -90 | -1.35 | | |
| C ₃ FCl ₇ - (CFC-211) | 1.0 | 100 | 1.76 | 0.00 |
| | -500 | -8.81 | | |
| C ₃ F ₂ Cl ₆ - (CFC-212) | 1.0 | 100 | 1.60 | 0.00 |
| | -500 | -7.98 | | |
| C ₃ F ₃ Cl ₅ - (CFC-213) | 1.0 | 100 | 1.41 | 0.00 |
| | -500 | -7.06 | | |
| C ₃ F ₄ Cl ₄ - (CFC-214) | 1.0 | 100 | 1.20 | 0.00 |
| | -500 | -6.01 | | |
| C ₃ F ₅ Cl ₃ -(CFC-215) | 1.0 | 100 | 0.96 | 0.00 |
| | -500 | -4.82 | | |
| C ₃ F ₆ Cl ₂ - (CFC-216) | 1.0 | 100 | 0.69 | 0.00 |
| | -500 | -3.45 | | |
| C ₃ F ₇ Cl- (CFC-217) | 1.0 | 100 | 0.37 | 0.00 |
| | -500 | -1.87 | | |
| All isomers of the above chemicals | | [Reserved] | | |
| 4. Group IV: | | | | |
| CCl ₄ -Carbon Tetrachloride | 1.1 | 50.0 | 1.0 | 0.00 |
| 5. Group V: | | | | |
| C ₂ H ₃ Cl ₃ -1,1,1 Trichloroethane (Methyl chloroform) | 0.1 | 6.3 | 0.11 | 0.00 |
| All isomers of the above chemical except 1,1,2-trichloroethane | | [Reserved] | | |
| 6. Group VI: | | | | |
| CH ₃ Br-Bromomethane (Methyl Bromide) | 0.7 | | [Reserved] | |
| 7. Group VII: | | | | |
| CHFBr ₂ - | 1.00 | | [Reserved] | |
| CHF ₂ Br-(HBFC-22B1) | 0.74 | | [Reserved] | |
| CH ₂ FBr | 0.73 | | [Reserved] | |
| C ₂ H ₂ FBr ₄ | 0.3-0.8 | | [Reserved] | |
| C ₂ H ₂ F ₂ Br ₃ | 0.5-1.8 | | [Reserved] | |
| C ₂ H ₂ F ₃ Br ₂ | 0.4-16 | | [Reserved] | |
| C ₂ H ₂ F ₄ Br | 0.7-1.2 | | [Reserved] | |
| C ₂ H ₂ F ₂ Br ₃ | 0.1-1.1 | | [Reserved] | |
| C ₂ H ₂ F ₂ Br ₂ | 0.2-1.5 | | [Reserved] | |
| C ₂ H ₂ F ₃ Br | 0.7-1.6 | | [Reserved] | |
| C ₂ H ₂ F ₂ Br ₂ | 0.1-1.7 | | [Reserved] | |
| C ₂ H ₂ F ₂ Br | 0.2-1.1 | | [Reserved] | |
| C ₂ H ₂ F ₂ Br | 0.07-0.1 | | [Reserved] | |
| C ₃ HFBr ₆ | 0.3-1.5 | | [Reserved] | |
| C ₃ HF ₂ Br ₅ | 0.2-1.9 | | [Reserved] | |
| C ₃ HF ₃ Br ₄ | 0.3-1.8 | | [Reserved] | |
| C ₃ HF ₄ Br ₃ | 0.5-2.2 | | [Reserved] | |
| C ₃ HF ₅ Br ₂ | 0.9-2.0 | | [Reserved] | |
| C ₃ HF ₆ Br | 0.7-3.3 | | [Reserved] | |
| C ₃ H ₂ FBr ₅ | 0.1-1.9 | | [Reserved] | |
| C ₃ H ₂ F ₂ Br ₄ | 0.2-2.1 | | [Reserved] | |

| Controlled substance | ODP | AT L | CLP | BLP |
|---|------------|-------|------------|------|
| C ₃ H ₂ F ₃ Br ₃ | 0.2–5.6 | ..... | [Reserved] | |
| C ₃ H ₂ F ₃ Br ₂ | 0.3–7.5 | ..... | [Reserved] | |
| C ₃ H ₂ F ₃ Br | 0.9–1.4 | ..... | [Reserved] | |
| C ₃ H ₂ FBr ₄ | 0.08–1.9 | ..... | [Reserved] | |
| C ₃ H ₂ F ₃ Br ₃ | 0.1–3.1 | ..... | [Reserved] | |
| C ₃ H ₂ F ₃ Br ₂ | 0.1–2.5 | ..... | [Reserved] | |
| C ₃ H ₂ F ₃ Br | 0.3–4.4 | ..... | [Reserved] | |
| C ₃ H ₂ FBr ₃ | 0.03–0.3 | ..... | [Reserved] | |
| C ₃ H ₂ F ₂ Br ₂ | 0.1–1.0 | ..... | [Reserved] | |
| C ₃ H ₂ F ₂ Br | 0.07–0.8 | ..... | [Reserved] | |
| C ₃ H ₂ F ₂ Br ₂ | 0.04–0.4 | ..... | [Reserved] | |
| C ₃ H ₂ F ₂ Br | 0.07–0.8 | ..... | [Reserved] | |
| C ₃ H ₂ FB | 0.02–0.7 | ..... | [Reserved] | |
| 8. Group VIII: CH ₂ BrCl (Chlorobromomethane) | 0.12 | ..... | [Reserved] | |
| B. Class II: CHFC ₂ -Dichlorofluoromethane (HCFC-21) | [Reserved] | 2.1 | 0.03 | 0.00 |
| CHF ₂ Cl-Chlorodifluoromethane (HCFC-22) | 0.05 | 15.3 | 0.14 | 0.00 |
| CH ₂ FCl-Chlorofluoromethane (HCFC-31) | [Reserved] | 1.44 | 0.02 | 0.00 |
| C ₂ HFCl ₂ -(HCFC-121) | [Reserved] | 0.6 | 0.01 | 0.00 |
| C ₂ HF ₂ Cl ₂ -(HCFC-122) | [Reserved] | 1.4 | 0.02 | 0.00 |
| C ₂ HF ₃ Cl ₂ -(HCFC-123) | 0.02 | 1.6 | 0.016 | 0.00 |
| C ₂ HF ₂ Cl-(HCFC-124) | 0.02 | 6.6 | 0.04 | 0.00 |
| C ₂ H ₂ FCl ₂ -(HCFC-131) | [Reserved] | 4.0 | 0.06 | 0.00 |
| C ₂ H ₂ F ₂ Cl ₂ -(HCFC-132b) | [Reserved] | 4.2 | 0.05 | 0.00 |
| C ₂ H ₂ F ₃ Cl-(HCFC-133a) | [Reserved] | 4.8 | 0.03 | 0.00 |
| C ₂ H ₃ FCl ₂ -(HCFC-141b) | 0.12 | 7.8 | 0.10 | 0.00 |
| C ₂ H ₃ F ₂ Cl-(HCFC-142b) | 0.06 | 19.1 | 0.14 | 0.00 |
| C ₃ HFCl ₂ -(HCFC-221) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ HF ₂ Cl ₂ -(HCFC-222) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ HF ₃ Cl ₂ -(HCFC-223) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ HF ₄ Cl ₃ -(HCFC-224) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ HF ₅ Cl ₂ -(HCFC-225ca) | [Reserved] | 1.5 | 0.01 | 0.00 |
| (HCFC-225cb) ..... | ..... | –1.7 | ..... |  |
| C ₃ HF ₆ Cl-(HCFC-226) | [Reserved] | 5.1 | 0.04 | 0.00 |
| C ₃ H ₂ FCl ₃ -(HCFC-231) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₂ F ₂ Cl ₂ -(HCFC-232) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₂ F ₃ Cl ₂ -(HCFC-233) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₂ F ₄ Cl ₂ -(HCFC-234) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₂ F ₅ Cl-(HCFC-235) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₃ FCl ₂ -(HCFC-241) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₃ F ₂ Cl ₂ -(HCFC-242) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₃ F ₃ Cl ₂ -(HCFC-243) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₃ F ₄ Cl-(HCFC-244) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₄ FCl ₂ -(HCFC-251) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₄ F ₂ Cl ₂ -(HCFC-252) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₄ F ₃ Cl-(HCFC-253) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₅ FCl ₂ -(HCFC-261) | [Reserved] | ..... | ..... | 0.00 |
| C ₂ H ₅ F ₂ Cl-(HCFC-262) | [Reserved] | ..... | ..... | 0.00 |
| C ₃ H ₂ FCl-(HCFC-271) | [Reserved] | ..... | ..... | 0.00 |
| All isomers of the above chemicals | | | [Reserved] | |

[60 FR 24986, May 10, 1995, as amended at 68 FR 42894, July 18, 2003]

**APPENDIX G TO SUBPART A OF PART 82—
UNEP RECOMMENDATIONS FOR CONDITIONS APPLIED TO EXEMPTION FOR ESSENTIAL LABORATORY AND ANALYTICAL USES**

1. Essential laboratory and analytical uses are identified at this time to include equipment calibration; use as extraction solvents, diluents, or carriers for chemical analysis; biochemical research; inert solvents for chemical reactions, as a carrier or laboratory chemical and other critical analytical

and laboratory purposes. Pursuant to Decision XI/15 of the Parties to the Montreal Protocol, effective January 1, 2002 the following uses of class I controlled substances are not considered essential under the global laboratory exemption:

a. Testing of oil and grease and total petroleum hydrocarbons in water;

b. Testing of tar in road-paving materials; and

c. Forensic finger printing.

Production for essential laboratory and analytical purposes is authorized provided that these laboratory and analytical chemicals shall contain only controlled substances manufactured to the following purities: